DEVELOPING RESEARCH AND PRACTICE

Barriers and facilitators to the implementation of the collaborative method: reflections from a single site

P J Newton, P M Davidson, E J Halcomb, A R Denniss

Qual Saf Health Care 2007;**16**:409–414. doi: 10.1136/qshc.2006.019125

See end of article for authors' affiliations

Correspondence to: P J Newton, School of Nursing, University of Western Sydney, Locked Bag 1797, Penrith South DC, New South Wales 1797, Australia; phil_newton@wsahs.nsw.gov.au

Accepted 27 May 2007

Background: A collaborative is an effective method of implementing evidence-based practice across multiple sites through the sharing of experience and knowledge of others in a similar setting, over a short period of time. Collaborative methods were first used in the USA but have been adopted internationally.
Aim: This paper sought to document the facilitators and barriers to the implementation of the collaborative method, based on a single site's experience of participating in a multisite, state-wide heart failure collaborative.
Method: Qualitative data was collected using three complementary methods: participant observation, reflective journalling and key informant interviews. Quantitative monitoring of team performance occurred monthly according to prespecified performance indicators.
Findings: Barriers and facilitators that were identified by this study included: organisational factors, team composition, dynamics and networking, changing doctor behaviour, clinical leadership and communication.
Conclusion: The findings from this study underscore the importance of leadership, communication and team cohesion for the successful implementation of the collaborative method at individual sites. In addition, the importance of a preparatory stage that deals with known barriers and facilitators to the collaborative method before the commencement of the official study period was highlighted. The potential for the collaborative approach to improve clinical outcomes warrants further systematic evaluation of process issues and consideration of the barriers and facilitators to implementation in various settings.

A collaborative is a quality improvement method that seeks to implement evidence-based practice through the sharing of experience and knowledge of others in a similar setting, over a short period of time.[1 2] The collaborative method was first used in the USA, but other models have since been developed in Australia, France, Norway, Sweden and the UK.[1] Many collaborative models exist, including the Institute for Healthcare Improvement Breakthrough Series.[1]

The Plan-Do-Study-Act (PDSA) cycles are integral to the collaborative method. The PDSA cycles are conducted in repetitive cycles to drive change.[3 4] Figure 1 illustrates how continuous PDSA cycles are used to move from hunches and theories to implementing changes that result in improvements in either process or outcome measures. These cycles are not designed to be a singular intervention, rather they should be undertaken as a dynamic, cyclical process that is continually refined until the desired outcome is achieved.

The key characteristics that differentiate the collaborative method from other quality improvement strategies are[5]:

- engagement of clinical leaders and executive support;
- structured timelines and reporting mechanisms;
- an emphasis on implementation of evidence-based strategies;
- importance placed on collaboration and sharing of knowledge across institutions.

Much of the evidence for the collaborative method has come from multisite collaboratives.[6–8] Therefore, there is a paucity of evidence for smaller scale, single setting collaboratives and a limited understanding of the experiences of individual teams in the collaborative process.

New South Wales (NSW) is the largest state in Australia and has a system of universal coverage where responsibility for healthcare funding and monitoring lies in both the federal and state jurisdiction. NSW Health oversees the public health system across the state, whereas the federal government is responsible for community-based healthcare services. Following a restructure after the collaborative, NSW Health is now divided into eight area health services, each of which provides a range of acute and primary healthcare services.[9] The NSW Chronic Care Collaborative (CCC) was a joint initiative of the Institute for Clinical Excellence and NSW Health conducted in 2004–2005.[10] Twenty-two teams representing 18 area health services from across NSW, participated in the collaborative.[11] Teams comprised a range of clinical and management staff from both acute hospital and community-based health services, including a general practitioner representative, consumer and carer representatives, and an executive sponsor.[11]

AIM

This study aimed to integrate the findings of a literature review[12] with the findings of a descriptive exploratory study to identify and explore the barriers and facilitators to the implementation of the collaborative method at a single site participating in a state-wide collaborative.

METHOD

Study site

The site of the local collaborative team discussed in this paper is a multisite area healthcare service within NSW catering for an estimated resident population of 677 870.[13] Residents are highly culturally diverse, with 34.5% of the population being born overseas compared with the NSW average of 23.4%.[13] In addition to cultural diversity, the area contains pockets of considerable socioeconomic disadvantage.[13]

Abbreviations: CCC, Chronic Care Collaborative; NSW, New South Wales

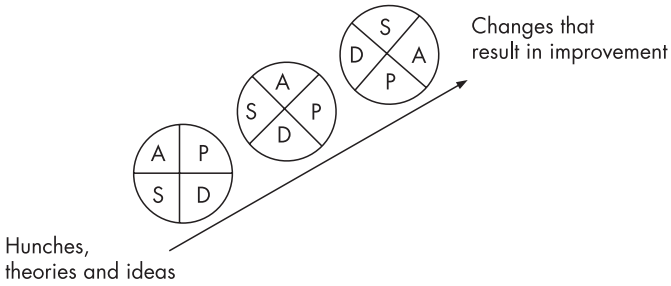

Figure 1 The Plan-Do-Study-Act cycle.[10]

At the commencement of the CCC, the area health service did not have a dedicated heart failure disease management programme. The introduction of a programme for this region was being undertaken simultaneously with the implementation of the CCC.

Data collection

A between-methods triangulated design allowed the researcher to explore the single collaborative site within a multifaceted and comprehensive framework. Ethical approval was gained from the human research ethics committee of the area health service and university before commencing data collection.

The impact of the collaborative changes was shown by the quantitative audit data collected by the collaborative team during the action cycle periods. Audits were undertaken on a monthly basis and submitted to the coordinator as aggregated data and used to track the progress of change. These data were analysed using descriptive statistics.

Three complementary qualitative data collection methods, participant observation,[14–16] reflective journalling,[17] and key informant interviews,[18] were used to explore the attitudes of team members to the collaborative process. With agreement of the local collaborative team, the researcher became a participant in the process, attending all team meetings and assisting with the data collection.

During the time as a participant observer, the researcher kept detailed field notes and a reflective journal. The journalling implied a reflective and critical analysis of individual and group interactions, and was used by the researcher to reflect on their own assumptions and practices.[19] The journal was a record of thoughts and insights that emerged throughout the study and assisted in providing context for the observations.[20] Key informants were approached for individual interviews on the basis of their role and function in the local team to achieve representation across facilities and disciplines. These interviews were audio-recorded and subsequently transcribed. Interview transcripts and the researcher's journal and field notes were all analysed using the process of content analysis.[16]

Box 1: Key facilitators and barriers

Facilitators

- Adequately resourced
- Strong senior leadership support
- Creating changes that are small scale and realistic within methodological timeline

Barriers

- Under resourced
- Weak leadership
- Attempting to create changes that are to large scale and unrealistic

Box 2: Diagnostic and management bundles

Diagnostic bundle

- Focused clinical history
- Clinical examination
- Echocardiography

Management bundle

- Baseline investigations
- ACE inhibitor
- Approved β blocker
- Dose titration schedule for ACE inhibitor and β blocker
- Smoking cessation
- Referral to cardiac rehabilitation
- Completion of cardiac rehabilitation programme
- Schedule of review with general practitioner
- Current influenza immunisation
- Current pneumococcal immunisation
- After hours point of contact
- Advanced care directives

FINDINGS

Findings in key performance indicators

We have previously reported the findings of the potential of the collaborative method to improve the outcomes of people with heart failure.[12] Key barriers and facilitators that were identified are summarised in box 1. Interventions for the collaborative were placed into diagnostic and management bundles (box 2). These data items were derived from the NSW Clinical Services Framework for Heart Failure and were collected in three discrete settings: (1) the emergency department; (2) on discharge; and (3) in the community setting (general practice, cardiac rehabilitation and community nursing).[10] A full report of the NSW CCC has been published and is beyond the scope of this paper.[21] Briefly, the report outlines the aggregated data from all participating teams in the heart failure collaborative. Some examples of improvements that occurred during the collaborative period were increased reporting of diagnostic bundle items for heart failure in the community ($p<0.001$) and at discharge ($p<0.001$). These improvements were not seen in the emergency department ($p<0.10$). However, the emergency department showed significant improvements in the use of β blockers ($p<0.02$) and dose titration schedules ($p<0.001$). Referral to a rehabilitation programme and discussion of advance care directives were not significant in any of the three settings. Admissions to hospital with a diagnosis of heart failure were significantly less during the study period than in the corresponding 3 months in the preceding year. This is indicative of the impact of the implemented strategies.

Figure 2 illustrates local team results in the prescription of ACE inhibitors and β blockers and having a dose titration schedule for these medications. This was a significant achievement for the local team as Intervention One of the CCC was to have all patients with heart failure on a dose titration schedule for ACE inhibitors and β blockers at discharge. Strategies developed by the team to achieve this target included the development of a dose titration proforma, educational and

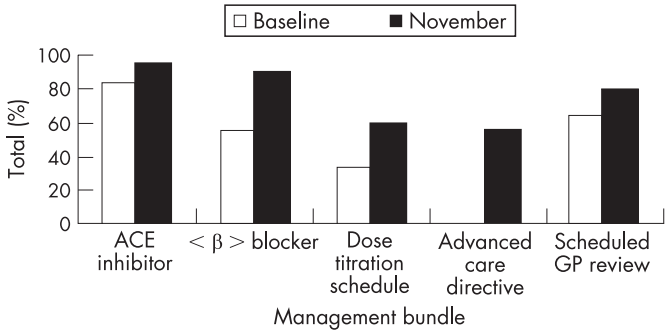

Figure 2 Results of monthly audits.

communication activities including a workshop for general practitioners. The increase in use from 35% at baseline to 77% probably reflects an improvement as a result of the targeted interventions. However, evidence of gains in areas requiring more complex cross-sector negotiation reveals achievements were not as pronounced. For example, documentation of referral to cardiac rehabilitation increased from 14% to 35% and self-management support from 45% to 50%. Such challenges are consistent with those reported in the literature.[8 22] These data must also be interpreted in the context of small sample sizes and purposive sampling used in this investigation. The more reliable and robust data derived from the aggregated CCC data are described in table 1.

Evaluation of the collaborative process

The six key themes that emerged from the qualitative data which explored the collaborative process were:

- system inflexibility for rapid change—contextual and organisational factors;
- need for clinical leadership;
- cohesion to drive change;
- conceptual challenges: ''getting your head around the method'';
- ensuring all voices are heard;
- consciousness raising awareness and optimism.

These themes are discussed in turn below within the context of the integrated literature review.[12]

System inflexibility for rapid change—contextual and organisational factors

The study site had recently implemented a clinical streaming model, meaning that the organisational and management processes for cardiac services had been integrated on an area-wide basis, rather than being managed at individual facilities as had been done previously. This meant that the team at the beginning of the project were just getting to know each other and as such was not a ''natural team''.

Each individual facility has its own culture, norm, values, beliefs and behaviours.[23] The collaborative method had the flexibility to allow these organisations to implement changes that reflected the culture and behaviour of individual facilities. An attempt to make a systemic change across all levels of the organisation is an immense undertaking that requires a well-developed understanding of the culture and how best to implement and manage change. If teams believe in the change process and can identify with the purpose of the change, they are more likely to drive the change than if the relevance of the change is not easily identified within the organisation.[24]

Interview data revealed that participants considered that current organisational systems in healthcare were ''not geared for rapid change''. This is of particular concern given that rapid change is an integral component of the collaborative method.[3] One participant commented that ''the current system is already stretched'' making it difficult to accommodate additional data collection tasks and meetings within the working schedule. During the study period, a state-wide restructure of area health services contributed to insecurities and anxieties related to clinical systems and process issues.

System inflexibility is a characteristic of the bureaucracy of acute hospital environments.[25] As can be seen from fig 2, the local collaborative team achieved improvements in the number of patients receiving documented levels of titrated ACE inhibitors and β blockers. In an attempt to sustain these improved prescription levels, the collaborative team introduced a medication titration chart which every patient admitted to each cardiology department within the area health service was to receive as part of their discharge, as a guide to their general practitioner to titrate their medications. However, the implementation of this form was delayed. The form required consideration by the collaborative team and formal endorsement by the hospital forms and drug committees before testing or implementation. This bureaucratic process impeded the ability of the local collaborative team to implement changes that required wider consultation and approval. One respondent indicated that they felt that there was a ''fear of change''. This ''fear of change'' was described by another participant as indicative of the health system wanting to ''dot the i's and cross the t's'' before making a change because there was a ''fear of failing''. It is evident that achieving this within the tight time frames of a PDSA cycle is difficult and contributed to the perceived lack of progress in achieving quantifiable improvements in some outcomes.

Table 1 The New South Wales Chronic Care Collaborative aggregated data (adapted from NSW Health[21])

	N*	Change†	p‡
β Blocker prescription	82	2.78	0.04
ACE inhibitor prescription	82	2.91	0.01
Participation in rehabilitation programme	82	2.11	0.27
Self-management support programme	83	3.39	0.07

*Number of audits.
†Average per cent change per month (the slope coefficient for the linear trend across the months April to November).
‡Significance of change.

Need for clinical leadership

The need for strong clinical leadership to drive the changes through an organisation has been widely shown.[23 26–29] This study used a clinical champion at each clinical site to drive change through promotion, education and measurement of change. Without strong clinical leadership and commitment at the facility level, it would be not be possible for any of the changes implemented to be sustained within the clinical setting.[28] Executive leadership is important in driving change by ensuring there are adequate personnel and resources available to the collaborative teams. On a state-wide level, the strong leadership at management, clinical and policy levels drove the substantial improvements achieved at the various sites.[21]

The collaborative method is about closing the gap between best practice and usual care.[12] In spite of this, the implementation of the method is contextually bound and a change in

clinician behaviour is required for this to occur. All clinicians can find the need to change systems, processes and behaviours challenging. The use of the principles of behaviour change within the collaborative method facilitates change in both individual clinicians and then more broadly at an organisational level. Of key importance is the use of multifaceted approaches in the collaborative method, information, networking and behavioural interventions to achieve improvement in clinical management. These strategies are in line with the best available evidence in changing clinician behaviours.[30–32]

Collaborative teams must be conscious of the potential barrier by clinicians to change and implement strategies to dealt with this issue. A clinical champion who advocates the change among other clinicians is an important component of the collaborative method.[29 33] Clinicians and the organisational executive must respect this clinical champion as the champion needs to form trusting relationships with both groups.

Cohesion to drive change

The collaborative approach offers benefits of sharing information, resources and provision of support to participating teams. As the conduct of the collaborative is dependent on consensus and cohesion, the composition and harmony between team members is critical. Teams that are fully formed and functioning prior to the commencement of the formal collaborative period seem to be most effective.[34] It would seem critical that considerable effort is applied to choosing team composition and that sufficient time is allowed before the commencement of the formal collaborative period to establish relationships and trust within the group.

It also seems that local teams who are spread across specialities, facilities and regions require particular energy to focus on tasks at hand and not bigger picture factors. The sufficient allocation of time to establish team dynamics, resources and training to better equip clinical leaders in the collaborative method and change management theory will facilitate the development of cohesion within the team. Exploration of constructs such as self-efficacy and capacity for change may be of use, given some comments of respondents, regarding inertia and avoidance of change.[35]

This study observed the challenges organisations face when trying to implement multiple, diverse changes in a short time. It seems that smaller scale projects, minimising the need for broader consultation and improvement are more appropriate to the PDSA cycle. Having said this, these small scale gains are often in the short term, and broader, more sustainable system change requires engaging with decision makers and the wider bureaucratic process. Without consultation with key stakeholders at this level, the changes implemented cannot be sustained in the long term if there is no change in the system.[33] The collaborative approach is well placed to achieve these gains.

The ability of teams to keep the same personnel during the course of the collaborative is vital for maintaining the cohesiveness and team dynamics.[33] If a change in personnel is required, the leadership of the group must develop strategies to maintain the group cohesiveness and team dynamics It is also important when planning collaborative initiatives to take into consideration the resources, time and burden on clinical staff.[36–39] There is a natural resistance from clinicians to change their current practice without justification to those trying to implement the change. The current healthcare system is under considerable strain, and changes that increase the workload of clinicians are not likely to be sustainable in the long term. Teams must be conscious of creating changes that increase the workload of clinicians.[12]

Conceptual challenges: ''getting your head around the method''

Several participants described challenges in understanding the conceptual elements of the collaborative process. One participant said: ''concepts can be difficult getting your head around''. Another participant commented that they considered that the group had not ''understood the principles of small change'' and yet another participant perceived that the PDSA cycles ''were too big picture focused'' and therefore not achievable in the designated action periods.

The issue of overcoming barriers to the implementation of a PDSA cycle were discussed throughout the process. For example, the need to employ a cardiac rehabilitation nurse before the implementation of the programme was a time consuming exercise due to the bureaucratic process of human resource management and the time spent developing and implementing a rehabilitation model. This subsequently affected the ability of the collaborative team to meet the predetermined timelines. The researcher and other respondents observed that the process of implementing a change was not seen to have commenced until these issues had been addressed. One participant stated that ''sometimes this [the need to employ someone] was used as an excuse'' not to make a change.

As part of the collaborative, four learning sessions were conducted, which were an opportunity for all participating teams in the state to come together and learn about the collaborative method. These meetings also provided an opportunity for teams to disseminate results to the other teams since the previous state meeting. One local team member said during a meeting that the learning sessions ''are more than a talkfest'' when the question was asked about how useful they were. Another local team member described them as ''[being of] great value because of sharing how programs are done''. The ''openness and honesty'' of all the teams was seen as a positive component of the learning sessions as they allowed discussion of the barriers and facilitators experienced by each team and identified measures that had been trialled to overcome these issues. Another participant described the learning sessions as useful because they allowed participants to ''learn about the collaborative'' approach and benefit from the ''team bonding'' that occurred at these sessions. Although the solutions and problems experienced by each team were unique to their local situation, presentation of their experiences at the learning sessions allowed other teams to apply that knowledge to their local situation. This rapid spreading of knowledge through both the experience of one team as it makes changes and the learning from the experience of other teams participating in the same process is a vital component of the collaborative process.

Ensuring all voices are heard

Throughout the meetings, the researcher observed tensions between members of various facilities. These tensions largely related to the reconciling of discrete systems and processes across the area health service and mechanisms for implementing change. Reflective journal notes also revealed differences in opinions related to systems and process issues and also in philosophical approaches to care. The researcher noted differences and tensions between the specialist heart failure and more generalist, primary care approaches and philosophy of chronic care. The latent political, social and cultural agendas present in relation to amalgamation under a streaming model were a constant undercurrent, which periodically limited the ability of the group to achieve consensus and cohesion on decisions impacting on improvement in the diagnostic and management bundles.[40 41]

Some local team members felt that it was difficult to have their opinions and voices heard within the collaborative process. The area-wide approach to clinical care and governance has led to a perception of the dominance of larger facilities. Some local team members expressed feeling of disempowerment on both an individual and organisational level. One local team member expressed that they were ''very frustrated''. Further, the emphasis of the CCC on biomedical aspects of heart failure management such as pharmacological intervention and diagnostic testing tended to lose the consumer's voice in the process.

One of the core aims of the collaborative method is the spread of knowledge across multiple sites.[4] To achieve this effective communication between the participating teams is necessary.[4] Sharing of experiences between participating teams at the state-wide meetings allowed them to broaden their concept of what is possible and was used to drive effective changes across participating collaborative teams.[42]

Communication between the collaborative team and the executive sponsors is vital for the continuing support from these managerial leaders.[34] The teams must keep the executive informed of the exact requirements and expectations of the group. This allows senior leadership to help in removing the barriers to the implementation of the changes.

Consciousness raising awareness and optimism

Overwhelmingly local team members considered that the CCC had been successful in ''getting heart failure management on the table'' within the area health service. The CCC was perceived, in its short existence, to have ''highlighted issues in cardiology that need to be worked on and improved''. This was a major achievement as several members of the team had been trying, unsuccessfully, to engage ongoing funding and executive support for many years. It was considered that the publication of the state-wide standards for heart failure management[40 41] and support of NSW Health had been instrumental in driving this process. Several participants viewed the increased emphasis on accountability and scrutiny of care as a positive outcome. For example, one participant commented the collaborative process ''creates awareness and desire to change and want to improve things''. Described by another participant as ''talked about in that context formally [creating awareness of issues] rather than in the corridors''. One local team member acknowledged that although they perceived that only ''small gains'' had been made during the period of intervention, the CCC has been good for publicising the need for improved management of heart failure. Most local team members viewed the future optimistically and considered that the CCC had provided leverage for long term clinical change.

Some local team members viewed the potential sustainability of clinical improvements achieved within the CCC with some scepticism. One local team member indicated that he ''wants to see them [the changes] sustained'' but ''not sure if changes will be sustainable'' because they are reliant on gaining ongoing funding and the continuation of executive support. Another participant commented that there was a clear ''need [for] endorsement from the organisation for the changes to be sustainable''.

LIMITATIONS OF THE STUDY

This project had several limitations. A purposive sample of key stakeholders was identified from the team to participate in the qualitative interviews. As is the case in all qualitative research, such sampling limits the generalisability the study findings.[16]

This study focused on a single heart failure team participating in a state-wide CCC. This team had its unique culture and political environment that influenced its performance in the CCC and may not necessarily be transferable to all future collaboratives. However, the barriers and facilitators identified in this study potentially provide useful information for teams planning future collaborative interventions. The replication of this study on a larger scale may provide greater understanding of the processes of the collaborative approach within the context of the individual collaborative team.

CONCLUSIONS

The need for health systems to embrace the collaborative method as a tool for closing the treatment gap has been widely shown.[1 3 29] Common facilitators and barriers to the implementation of the collaborative method identified in this study and the published literature include organisational factors such as resources and leadership, time pressures and clinician workload. The composition of teams and their ability to harmonise and maintain the same personnel throughout the process are important factors for the successful implementation of the collaborative method. The engagement of clinicians to modify their practice is reported in the literature to be difficult,[29] and the local collaborative team attempted to overcome this with a clinical champion in each of the units and strong executive support to ensure there were adequate resources and organisational support.

Despite the host organisation providing education sessions both before and during the collaborative, interview data revealed the local team felt there were challenges understanding the method during the early stages of the collaborative and this greatly impeded their initial progress. A greater preparatory stage before the commencement of the collaborative to dealt with known barriers and facilitators to the collaborative method may have helped overcome this barrier. Consolidation of team dynamics and cohesion is reported in the literature to be a critical factor in ensuring success of the collaborative approach, and this was identified in the present study to have been made difficult due to the uncertainty regarding the state-wide organisational restructure that was occurring simultaneously as the collaborative. Although implementation of these findings by future collaborative teams will depend on local cultural and environmental issues, they highlight potential facilitators and barriers to the successful implementation of the collaborative method, which may assist teams to identify and begin implementing strategies to overcome these before the commencement of the quality improvement initiative.

Authors' affiliations
P J Newton, E J Halcomb, School of Nursing, College of Health and Science, University of Western Sydney, New South Wales, Australia
P M Davidson, Centre for Cardiovascular and Chronic Care, School of Nursing, Curtin University of Technology, Sydney, New South Wales, Australia
A R Denniss, Sydney West Area Health Service, New South Wales, Australia

Competing interests: None declared.

REFERENCES

1 **Wilson T**, Berwick DM, Cleary PD. What do collaborative improvement projects do? Experience from seven countries. *Jt Comm J Qual Saf* 2003;**29**:85–93.
2 **Besserman E**, Brennan M, Brown III PA, *et al*. Multidisciplinary achievement: the collaborative approach to rapid cycle ICU and hospital change. *Qual Manag Health Care* 1998;**6**:43–51.
3 **Cretin S**, Shortell SM, Keeler EB. An evaluation of collaborative interventions to improve chronic illness care. Framework and study design. *Eval Rev* 2004;**28**:28–51.
4 **Kilo C**. A framework for collaborative improvement: Lessons from the Institute for Healthcare Improvement's breakthrough series. *Qual Manag Health Care* 1998;**6**:1–13.

5 **Berwick D**. Developing and testing changes in delivery of care. *Ann Intern Med* 1998;**128**:651–6.
6 **Flamm BL**, Berwick DM, Kabcenell A. Reducing cesarean section rates safely: Lessons from a ''Breakthrough Series'' Collaborative. *Birth* 1998;**25**:117–24.
7 **Kosseff A**, Niemeier S. SSM Health Care clinical collaboratives: improving the value of patient care in a health care system. *Jt Comm J Qual Improv* 2001;**27**:5–19.
8 **Leape LL**, Kabcenell AI, Gandhi TK, *et al*. Reducing adverse drugs events: lessons from a breakthrough series collaborative. *J Qual Improv* 2000;**26**:321–31.
9 **NSW Health**. Department of Health. Available at: http://www.health.nsw.gov.au (accessed 17 September 2004).
10 **NSW Health**. Chronic Care Collaborative. Available at: http://www.health.nsw.gov.au (accessed 17 September 2004).
11 **NSW Health, Institute for Clinical Excellence**. Chronic Care Collaborative Orientation Session, 5 February 2004.
12 **Newton PJ**, Davidson PM, Halcomb EJ, *et al*. The collaborative methodology and the potential to improve outcomes for people with heart failure. *J Cardiovasc Nurs* 2006;**21**:161–8.
13 **Centre for Epidemiology Indicators Research and Evaluation**. *Heart failure in WSAHS*. Sydney: Western Sydney Area Health, 2004.
14 **Jorgensen DL**. *Participant observation. A methodology for human studies*. USA: Sage Publications, 1989.
15 **Glense C**, Peshkin A. *Becoming Qualitative Researchers*. New York: Longman, 1992:39–62.
16 **Burns N**, Grove S. *The practice of nursing research: Conduct, critique, and utilization*, 3rd edn. Philadelphia: WB Saunders, 1997:527–68.
17 **Whitehead D**, Annells M. Sampling data and data collection in qualitative research. In: Schneider Z, Elliott D, Lo-Biondo-Wood G, eds. *Nursing research: methods, critical appraisal and utilisation*, 2nd edn. Sydney: Mosby, 2003:122–37.
18 **Holloway I**, Wheeler S. *Qualitative research in nursing*, 2nd edn. Oxford: Blackwell, 2002:79–96.
19 **Elliot D**. Approaches to research. In: Schneider Z, Elliott D, Lo-Biondo-Wood G, eds. *Nursing research: methods, critical appraisal and utilisation*, 2nd edn.Sydney: Mosby, 2003:21–37.
20 **Gomm R**. *Social research methodology*. China: Palgrave McMillian, 2004.
21 **NSW Health**. Evaluation: NSW Chronic Care Collaborative. Available at: http://www.health.nsw.gov.au/pubs/2005/pdf/chronic_care_v2.pdf (accessed 13 January 2006).
22 **Womer R**, Tracey E, Soo-Hoo W, *et al*. Multidisciplinary systems approach to chemotherapy safety: rebuilding processes and holding the gains. *J Clin Oncol* 2002;**20**:4705–12.
23 **Ferlie EB**, Shortell SM. Improving the quality of health care in the United Kingdom and the United States: A framework for change. *Milbank Q* 2001;**79**:281–315.
24 **Kilo C**, Kabcenell A, Berwick D. Beyond survival: toward continuous improvement in medical care. *New Horizons* 1998;**6**:3–11.
25 **Putland C**, Baum F, MacDougall C. How can health bureaucracies consult effectively about their policies and practices? Some lessons from an Australian study. *Health Promot Int* 1997;**12**:299–309.
26 **Bartlett J**, Cameron P, Cisera M. The Victorian emergency department collaboration. *Int J Qual Health Care* 2002;**14**:463–70.
27 **Bonomi AE**, Wagner EH, Glasgow RE, *et al*. Assessment of Chronic Illness Care (ACIC): a practical tool to measure quality improvement. *Health Serv Res* 2002;**37**:791–820.
28 **Mills PD**, Weeks WB. Characteristics of successful quality improvement teams: lessons from five collaborative projects in the VHA. *Jt Comm J Qual Saf* 2004;**30**:152–62.
29 **Montoye CK**, Mehta RH, Baker PL, *et al*. A rapid-cycle collaborative model to promote guidelines for acute myocardial infarction. *Jt Comm J Qual Saf* 2003;**29**:468–78.
30 **Bandura A**. *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs: Prentice-Hall, 1985.
31 **Davis DA**, Thomson MA, Oxman AD, *et al*. Changing physician performance. A systematic review of the effect of continuing medical education strategies. *JAMA* 1995;**274**:700–5.
32 **Thomson O'Brien MA**, Oxman AD, *et al*. Educational outreach visits: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2000:CD000409.
33 **Ovretveit J**. How to run an effective improvement collaborative. *Int J Health Care Qual Assur* 2002;**15**:192–6.
34 **Ovretveit J**, Bate P, Cleary P, *et al*. Quality collaboratives: lessons from research. *Qual Saf Health Care* 2002;**11**:345–51.
35 **Andrew S**. Self-efficacy as a predictor of academic performance in science. *J Adv Nurs* 1998;**27**:596–603.
36 **Meredith L**, Mendel PJ, Pearson ML, *et al*. Success of implementation and maintenance of quality improvement for depression. Available at: http://www.rand.org/health/ICICE/findings.html (accessed 30 October 2004).
37 **Pearson M**, Wu S, Schaefer J, *et al*. Assessing the implementation of the chronic care model in quality improvement collaboratives. Available at: http://www.rand.org/health/ICICE/findings.html (accessed 30 October 2004).
38 **Pearson M**, Wu S, Shortell S, *et al*. Chronic Care Model (CCM) implementation emphases. Available at: http://www.rand.org/health/ICICE/findings.html (accessed 30 October 2004).
39 **Wu S-Y**, Pearson M, Schaeffer J, *et al*. Assessing the implementation of the Chronic Care Model in Quality Improvement Collaboratives: does baseline system support for chronic care matter. Available at: http://www.rand.org/health/ICICE/findings.html (accessed 30 October 2004).
40 **NSW Health**. *NSW clinical service framework for heart failure. Overview of the framework and its standards*, Volume 1. Sydney: NSW Department of Health, 2003.
41 **NSW Health**. *NSW clinical service framework for heart failure. A practice guide for the prevention, diagnosis and management of heart failure in NSW*, Volume 2. Sydney: NSW Department of Health, 2003.
42 **Doran K**, Henry S, Anderson B. Breakthrough change for adult cardiac surgery in a community-based cardiovascular program. *Qual Manag Health Care* 1998;**6**:29–36.